

# DRAGON USER

International edition

*The independent Dragon magazine*

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July 1985

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Telephone number  
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01-437-4343

Editor  
MARTIN CROFT

Production Editor  
BARBARA HALES

Software Editor  
GRAMAM TAYLOR

Editorial Secretary  
GERALDINE SMYTH

Advertisement Manager  
SIMON LANGSTON

Administration  
GERALDINE SMYTH

Managing Editor  
DUNCAN SCOTT

Publishing Director  
JERRY IRELAND

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# Editorial

THE NEWS that Compensense has taken delivery of a 128K Dragon  
prototype may not cause much of a ripple outside Dragon circles.

But a Dragon 128K is far more than just an indication of how far  
computers, like clothes, follow the dictates of fashion.

For one thing it shows that something can be done with the Dragon  
— there is life after the 64.

Those readers who managed to catch a glimpse of Eurohard's  
Dragon 200 at the last 6809 show will remember that there seemed little  
to write home about at the time.

The case may have been restyled, but the keyboard was the same. So  
were all the internal workings — it was just a 64 in a new box. The only  
real difference is the addition of an LED to show when the computer is  
turned on.

But it now turns out that the 64's RAM chip could accommodate 128K  
of memory all along. So why hasn't Eurohard managed to put the extra  
chips in?

Let's face it, given the choice between a stylish case and a little red  
light on the one hand, and an extra 64K of memory on the other what  
would most Dragon users choose?

Another thing the 128K prototype proves is that Compensense at least  
is willing to show some commitment to the continued development of  
the Dragon.

On the software front, companies like Microdeal, Adventure Interna-  
tional, Dilecom and many others are also still supporting the Dragon —  
although most of the games being released at the moment are  
conversions of titles for other machines.

But the majority of the support, which is responsible for the continued  
existence of the Dragon doesn't come from any of these companies —  
it comes from ordinary Dragon users. With all of its faults, the 6809 has  
thousands of loyal supporters.

Without the sort of commitment Dragon users have been showing  
over the last 12 months, there is no doubt that the machine would have  
been relegated to the museum like the Oric, the Lynx and others.

# Letters

This is the chance to air your views — send your tips, compliments and complaints to Letters Page, Dragon User, 13-15 Little Newport Street, London WC2H 9PP.

## Write on

WITH REFERENCE to my "Writer" program published in May's *Dragon User*, readers may be interested to know that I can supply copies of listings 1 and 2 on a single cassette at £5.95 including postage and packing.

Please write to me at the address below, and not at the one contained in the listing.

Phil Brooks  
1 Alcedon Close  
Gosport  
Northants

## and on

MAY I congratulate Phil Brooks on his excellent "Writer" extension interpreter program.

It is a pity that the manufacturers did not include a similar routine as a standard part of the Dragon's basic interpreter.

May I point out one small error in the accompanying article, though? EXEC 30594 causes the machine to crash. The machine code begins at location 30597 and therefore you should EXEC 30597 to install the program. Similarly you should CSAVE(MYNAME.TXT), 30587, 30707, 30587. Then upon reloading typing EXEC will install the routine.

S J Jones  
25 Hillingford Avenue  
Great Barr  
Birmingham B43 7NP

## Users USA

THESE IS now a Dragon User Group in the United States. The name of the group is "CHADONET", and currently has a membership of approximately 100 subscriptions. The group is headed by myself and I am currently enlisting the support of Dragon User Groups throughout the world.

DRAGONET will be publishing a monthly newsletter for all of its subscribers as well as other user groups. A national user group was greatly needed here in the US!

We are currently expanding our facilities to incorporate a Users' Bulletin Board System

via telecom, and will be supporting users of CG-8, FLICK, and other features of the Dragon, which has until now been little or none here in the US. Subscription is free, and open to all.

All enquiries should be made to: Dragon Users' Group, c/o Wayne H. Schell, 1511 Louisa Street, New Orleans, LA 70117, USA.

Wayne H Schell

## OS9 America

DRAGON USERS running OS9 may be interested in the existence of an American OS9 User's Group. The address is: OS9 Users' Group, PO Box 7688, Des Moines, Iowa 50322, USA.

Membership costs \$25 per year (but may be more for non-US residents) and for this you get five or more issues of the newsletter, and access to various public domain OS9 software programs of which there are 12 disks currently available, and 35 or more planned for the near future. The group charges \$3 per disk for handling, but again this may be more for postage outside the USA.

Robin Hamilton  
113 Valley Road  
Leighborough  
Leicestershire LE17 3JY

## Convert

I REFER to the "Conversion" program on page 21 of the April issue.

Unless used in the USA, the results of the gatorizations conversion may cause some confusion. When dealing with Imperial gallons, the factor 4.546011 has to be used instead of 3.78541 in lines 760, 770, 843 and 858.

J Jeffries  
18 Highlands Drive  
Malden  
Essex CM9 6BX

## Patch problem

REGRETTABLY, the printers got at the DRAGONCOS

patches in the May 86 issue of *Dragon User*. The following are the corrected values (changes underlined):

Fact 1: - 008F 97

Fact 2: - 001C D0 9D 0E

CP

Problem 2, Patch 2: - 00EF

There was also one error where documentation and patches did not keep pace.

Problem 4: replace line +178D with +1795 08 85 12

Only this latter error should have caused a problem, resulting in PRGTEST not operating correctly.

Philip Scott  
4 Badgewood Drive  
Finley  
Camberley GU10 5LP

## Fantasy Fight

IN REPLY to Mr Vine's plea for help in May's *Dragon User*, I have discovered three useful memory locations which make Fantasy Fight somewhat easier. At even the best games players would have difficulty in entering more than 15 of the 26 screens.

After loading the game normally (press F8587) and POKE SHOOT, LIVES (3-16); POKE SHOOT, WEAPON8 (3-127); POKE SHOOT, START ROOM (3-35) 29 is last room. Then EXEC 24718.

If more than 16 lives are entered then the slots then are drawn in program memory area, which could cause crashing. Also, if more than 127 weapons/keys are collected you are left with noise.

Clive Budge  
8 Haversham Court  
Greenleys  
Bucks MK12 5SD

## Users and repairers

HAVING JUST read the June issue of your magazine, I would like to express two points raised in your Editorial.

I can only agree that software for the Dragons is becoming hard to find, but I don't think that the loss of a company like Websters, who have studious-

ly sat for a long time, is any great loss to the Dragon scene.

There is still a lot of very good software being produced, even if much of it is available only by mail order, and a few more bits leaving the ship doesn't necessarily mean that it is just about to sink completely.

However, the main point that you raise, lack of service and repair facilities for the Dragons, isn't really valid.

We started the Dragon Users Group almost a year ago, with the intention not only of providing a means of communication between Dragon owners, but of providing help with Dragon-related problems, and that most certainly includes repairing such Dragons if we can!

We aren't a commercial Group. Our £7.50 per year membership charge covers only the cost of producing and distributing the monthly copy of "Dragon Update", but we guarantee to do our best to find answers to ANY Dragon problem, and that means hardware as well as software. Having several electronics engineers in the Group, we can carry out most Dragon repairs at local prices (postage I've had three to repair this week alone), and in a lot of cases we can advise members on diagnosis and repair of their own machines. This service is, naturally, restricted to Group Members, it wouldn't be economic to make it a general offer, and in any event, I have no intention of breaching on the toes of those fine companies who (try to) make a living out of computer repair work, but we DO exist, and we will continue to do so as long as there is a Dragon owner who needs us.

If anyone is interested in joining the Group, all they need to do is write or phone me for details. Although we started off as a "national" group, we now have members in most European countries and in the States, and members ages range from 11 to 74... we try to cover all possible interests.

Paul Gade  
National Dragon Users Group  
c/o Kewinair House  
Worthing  
Sussex



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## Add-ons and repairs

COMPUSENSE has appointed Race Electronics as its National Service Centre for the Dragon 32, 64 and peripherals.

In addition, CompuSense will be distributing a wide variety of hardware add-ons made by the Welsh company.

Ted Gorychod, CompuSense's managing director, said that Race had been appointed "because they were manufacturing Dragons last year, and they know a lot about them."

Dragon owners who wish to take advantage of the new service should contact Race Electronics direct. There will be a minimum charge of £20.

CompuSense will also be setting up a local repair network, and would like to hear from any companies capable of doing such work.

The new add-ons from Race include an RS232 Interface Unit, a Sideways ROM Cartridge, an EPROM Programmer (all for the Dragon 32), and a Dragon expansion Box System for the Dragon 32 and 64.

Race also manufacture a floppy tape microdrive system, and prototyping cards for the DTV enthusiasts.

The RS232 Interface will allow communication between a Dragon 32 and any other micro which uses the RS232 standard. It also means a 32 can control serial line printers, or connect to compatible modems. It will sell for around £50.

The sideways ROM Cartridge allows the user to hold up to four sets of EPROMs simultaneously in memory, ready for instant access. It will cost around £35.

The EPROM Programmer will allow users to blow their own EPROM chips, at a cost of around £30.

The Expansion box will allow the use of up to four cartridges at the same time. Each cartridge can then be individually selected from the keyboard. It will cost around £180.

The floppy tape microdrive system will give the users for faster access than audio cassettes can provide, at a lower price than disk.

The prototyping cards are available with tin plating at £5 and gold plating at £7. CompuSense will also be selling a Project Case to protect the cards, at £5.

Race Electronics are at Race House, Llanrhydd Road, Talbot Green, Pontyclun, Mid Glamorgan CF7 8YF.



The Race floppy tape microdrive

## National user group

THE NATIONAL Dragon Users Group costs £7.50 per year, which includes a monthly news letter covering software and hardware projects, hints and tips, articles and reviews.

Members can also write or phone in with any Dragon problems. Write to Paul Grade, National Dragon Users Group, 6 Navarre Road, Worthing, Sussex.

## Bulletin north east

CoCo 800 is a new Bulletin board designed for CoCo and Dragon users, especially those in the North East of England.

The system runs on a CoCo at present, but a Dragon 64 will be housed in it in the near future. Basic rate is 300/300 cba, with 7 bit even parity, but either 1200/75 or 1200/1200. Basic rates will be added once the 64 is on line.

There are the usual mes-

sage facilities allowing 25K in 10 lines. Users can also upload and download basic programs.

The board goes on line at 9 pm Mondays to Thursdays until 10 am. From 9 pm Fridays it stays open until 1 am Monday mornings.

CoCo 800 can be contacted on 091-265 1964 or write to 180 Rotherburn Road, Heaton, Newcastle on Tyne, NE6 5PQ.

## Cotswold comms

COTSWOLD Computers has two new communications packages for the Dragon 32 and 64.

The first is a full feature windows package containing a British Telecom approved modem and a software cartridge.

The cartridge software

allows log on and off and terminal mode. It also lets the user store Printout screens to tape, print the screens, prepare messages on an offline buffer and download software.

The Printout Windows package costs £39 inclusive of VAT and delivery.

The other product from

Cotswold is MODEM, a disk communication package running an OS-9 for the Dragon 64.

A cassette based program is also supplied which gives access to OS-9 disk files from Dragon Basic, and there is a comprehensive manual included. MODEM costs £29.95.

Cotswold Computers is at 6 Middle Row, Chipping Norton, Cotswolds G5 7JH.

## Dragon 128K

COMPUSENSE has taken delivery of a prototype 128K Dragon.

The machine is basically an upgrade from a 64 to a 128K model. The 512K chip used in the Dragon already has facilities for banking other memory, so the upgrade is just a matter of adding extra memory chips and changing the addresses.

Additionally, CompuSense will also be developing an upgrade for the Dragon 32, which will make it a 64K machine.

Apparently, the 32 cannot be given 128K because of the video chip used.

CompuSense's next project will be an onboard disk controller and hard disk interface. CompuSense is at PO Box 106, 2960 Green Lanes, London N13 5EA.

## Adventurer's Club

THE ADVENTURER'S Club is a new organisation aimed at relieving the sufferings of adventurers.

Membership of the club costs £10 per year. This includes 12 issues of the Member's Dossier, a monthly newsletter aimed at keeping readers informed of the latest happening in the adventure world.

The Dossier will also include reviews and tips for adventures. The first issue, 18 pages long, includes the first part of an in-depth study of 80 Diablos for the Dragon 32/64, with a number of very useful hints.

Henry Mueller, the Adventurer's Club Secretary, himself started with a Dragon and says that he has a great deal of fondness for it.

The Club also runs a phone-in adventure help service for members on 01-794 1261.

The Adventurer's Club is at 640 Milestone Road, London NW2 3PH.

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# Dragon adventures

Jason Orbaum takes another trip to the vaults to look at some classic Dragon adventure games

## Pi-manic

**Adventure: Pi-Mania**  
**Supplier: Activision**

THE ORIGINAL "Puzzle" adventure, the one that sparked off a series of similar programs with prices, none of which quite came up to the splendor of the Golden Sندان of PI, crafted in gold by Barbara Tippie.

However, if the rival prices didn't quite come up to the standard, the adventures, almost without exception, were about 5,000 per cent better!

Pi-Mania has very little internal logic, several random elements, stunningly brief location descriptions, and takes the most amazing length of time to play.

The reason for this time expenditure is that the response is chronically slow, not that the player will spend a long time thinking, as there is really very little to think about that can logically be worked out. The problems seem to rely on trial and error tactics and there is the "Pi-Man" (an animated pest) to throw an extra spanner in the works.

After you have worked out the movement system (this is possibly the best puzzle in the adventure) making a move takes a super fast 40 seconds giving you just enough time to fit the cassette into a passing incinerator — a process I heartily recommend! (I exaggerate of course about the time, it's really about 50 seconds.)

Given the superb adventures now available for the Dragon, why you should ever give this one a second look escapes me, unless of course you think you could win that 50,000.



## Wizard

**Adventure: Keys of the Wizard**  
**Supplier: Microdeal**

THIS is an adventure that puzzles me — I know what I have to do, and have almost done it, but haven't had to solve any problems yet!

The game, a real-time action-DSD-type game, is also a pure text adventure of, at first sight, considerable verbosity.

There are two basic aims, and therefore two ways of playing the game; the first is to collect all the treasure in the adventure's domain and take it to the sanctuary, and the second is to kill all of the various inhabitants of the area (except the unicorn who is supposedly friendly) in a bloodthirsty, and noisy, series of battles.

The game talks to you (not very often, and with a very limited vocabulary I must admit) and has several other traps and bumps to keep you awake. The presentation is superb, even allowing you to view information that has recently vanished off the screen.

The parser (that's the bit that turns your English commands into things that the computer understands) is fairly standard (Verblausen, no infocom stuff here), and the response, being in machine code, is nearly immediate.

The adventure, when it was released early in 1984, was the best available for the Dragon. Since its release it has been overshadowed by some incredibly good adventures. This does not mean that it is not an adventure worth

buying; it most certainly is.

To sum up them, not an adventure for the puzzle player, more for those of us who like a colourful jaunt around another land, pausing only to pick up treasures and, of course, massacre the odd creature.



## Franklin

**Adventure: Franklin's Tomb**  
**Supplier: Salamander Software**

ANOTHER classic adventure, this time for the adventures who have got past the beginnings of their craft but are not yet ready to take on the massed forces of a Zork or Snowball (neither of which, unfortunately, look like ever becoming available to the Dragon owner).

This game is the first in a series of three (the equally competent sequels are *Lost in Space* and *Fishy Business*) and the adventure is cast in the roll of Dan Diamond, private detective. You have received a note saying "Please come. You're our only hope"

IT IS impossible to review all the other Dragon adventures in the market but here are my own personal ratings for several more. These are, of course, only personal so if you disagree with several of my reviews then these will probably not be of use to you.

The terms used are here explained.

**GENERATION** refers to the type of game along these lines:

1st) Text only (the parser's adventure).

2nd) Arcade adventure (D&D or "Tutankhamun" style).

3rd) Text with pictures (for those with little imagination or descriptive power).

4th) Multi-player adventures.

**PARSER** refers to the complexity of the sentences the game can understand.

**LOGIC** refers to the puzzles and whether they can be considered to be fair.

**PLAYABILITY** is a rating of how much chance the game has of keep-

ing you up until the small hours playing.

**MOOD** is a rating of the pictures on a 2nd or 3rd generation adventure, and the text on a 1st generation.

The **GENERAL** rating is the same as that which would accompany a full review, and, like all the others is out of five.

As a final note, many of these adventures have been available for quite some time now and as such may be difficult to acquire. Also, it should be pointed out that during grading no allowance has been made for age of program.

**Adventure: The Goldenrod Incident**

**Supplier: Salamander Software**  
**Generation: 1st**

Parser:	2
Logic:	1
Playability:	3
Mood:	3
General:	2

**Adventure: Lost in Space (Franklin II)**

**Supplier: Salamander Software**

Generation: 1st	
Parser:	3
Logic:	5
Playability:	4
Mood:	5
General:	5

**Adventure: Fishy Business (Franklin III)**

<b>Supplier: Salamander Software</b>	
Generation: 1st	
Parser:	5
Logic:	4
Playability:	5
Mood:	4
General:	4

**Adventure: The Emperor Must Die**  
**Supplier: Phoenix Software**

Generation: N/A (there are two programs, an arcade game and an adventure, the successful completion of one takes you into the other, which is a 1st generation adventure with map on call, all ratings apply to the adventure)

Parser:	1
Logic:	2

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with decisions to a graveyard crypt. Suddenly, the ground gives way beneath you, and you are in the tomb. . . .

The actual instructions that come with the game are done in a hilarious Raymond Chandler style, but this prose style is totally different from that used to describe the locations. Instead, the detective theme does not reoccur within the adventure.

But what the game lacks in humor, it more than makes up for in puzzles of varying complexity, from a fairly easy starter, to the brilliance of the gallery.

I found the game a pleasure to play from beginning to end, and, although it was written in Basic, the responses were tolerable, and the screen display excellent (the format used has since been copied on several occasions).

I recommend this game to all but the hardened adventurer, who will find it too easy.



## Doom

Adventure: *Caverns of Doom*  
Supplier: Microdeal

THIS Microdeal adventure was released at the same time as *Syzygy* (reviewed elsewhere) and although another big adventure (100 different rooms), is not as likely to become a classic.

However, that does not

affect the game's merits and they are considerable. The descriptions are pleasant, not verbose enough for me, and the general mood conjured up is ideal.

Your task is quite simply to escape from an abandoned and crumbling mine complex . . . however, that may be more difficult than it is at first supposed.

The response is fast — the game is in machine code — and the screen layout is absolutely superb (green on black, windowed screen).

Again, Microdeal have had the very good sense to list the commands on the cassette inlay, which saves a lot of time and energy hunting commands.

This is quite simply an excellent first generation (text only) adventure for the average adventurer. The game is selling for a fiver and this is a fiver that could be spent on many worse things than this.

It is available from your local Dragon supplier (if you still have one) or the Microdeal mail order service, which appears to have been designed by Harold Pinter (judging by my experience!).



## Syzygy

Adventure: *Syzygy*  
Supplier: Microdeal

THIS IS Microdeal's latest

adventure for the Dragon, and my initial impression is to say it's the best third generation (text with graphics) Dragon adventure available, if not the best third generation adventure I've seen for some time.

Stuck aboard the Death-Star, the blurb runs, you have already had one near fatal encounter with Darth Vader and your strength is nearly gone . . . a huge task lies before you as you attempt to destroy the Dark Lord of the Sith and escape the Death-Star.

No trouble with vocabulary — it is all there on the instruction leaflet. It is just a matter of using the right words at the right place.

The game is gigantic; there are 300 locations to explore, and over 250 pictures (as many of the corridors look alike) and the movement from location to location is instantaneous.

The screen (PMODE 4) is set out with an inventory on permanent display, a clear small picture top right and the text input and cursor below all this.

The puzzles have been clearly thought out, the graphics have been excellently designed, and the whole game plays superbly.

It is a great adventure, although admittedly very difficult, and is a pleasure to play. If the Dragon adventurer doesn't own this one then they ought to be ashamed of them-

selves — buy it as once!



## Pulsar

Adventure: *Escape from Pulsar 7*  
Supplier: Channel 8 Software

THIS IS one of the Brian Howarth mysterious adventure series so often mentioned in the Adventure Trail.

This one has the adventurer on board a spaceship with a lethal alien who has escaped and killed all of the crew save you. All you have to do is escape in the shuttlecraft.

The game is played with text on the lower screen, and the Dragon 64 version produces graphics.

The display is very good except when printing up the location descriptions, at which point it jerks and flashes alarmingly.

The game is well structured and written, with puzzles of good design and increasing complexity, although the descriptions of the locations leave a lot to be desired.

The response is fast, the parser simple but effective and the feel just right, clinical, yet evocative.

Channel 8's entire range has now been taken over by Adventure International — it's good to see they are still available.



Playability: 1	General: 3	Adventure: <i>Patterson's Story</i> (in three parts on one cassette)
Mood: 0		Supplier: Shards Software
General: 1	Adventure: <i>Position</i>	Generators: 2nd, 1st and N/A (the third program is a series of tests) respectively
Adventure: <i>Downland</i>	Supplier: Dragon Data (I have no idea who else sells it)	Parser: N/A, 3, N/A
Supplier: Microdeal	Generations: 1st	Logic: 2, 3, 4
Generations: 2nd	Parser: 3	Playability: 3, 2, 3
Parser: N/A	Logic: 5	Mood: 3, 4, N/A
Logic: 5	Playability: 4	General: 3, 3, 4
Playability: 5	Mood: 4	
Mood: 5	General: 4	
General: 5		
Adventure: <i>Time Travel</i>	Adventure: <i>Alcatraz II</i>	Adventure: <i>Wings of War</i>
Supplier: Microdeal	Supplier: Microdeal	Supplier: Salamander Software
Generations: 2nd	Generations: 2nd	Generations: 1st
Parser: N/A	Parser: N/A	Parser: 2
Logic: 2	Logic: 3	Logic: 4
Playability: 5	Playability: 3	Playability: 4
Mood: 5	Mood: 3	Mood: 4
General: 4	General: 4	General: 4
Adventure: <i>The Ring of Darkness</i>	Adventure: <i>Ultimate Adventure</i>	Adventure: <i>Fantasy Flight</i>
Supplier: Wimsacft	Supplier: Microdeal	Supplier: Cable Software
Generations: 2nd/3rd	Generations: 1st	Generations: 2nd
Parser: 3	Parser: 3	Parser: N/A
Logic: 3	Logic: 1	Logic: 4
Playability: 1	Playability: 1	Playability: 5
Mood: 2	Mood: 1	Mood: 5
	General: 1	General: 5

# Looking through the Dragon's windows

Brian Cudge with two programs to help you put windows on your Dragon

THE FACILITY to have several 'virtual' screens, or windows displayed at once is usually only found on the more expensive computers. The program presented here gives this facility on the Dragon boards. Up to five separate windows can be used at once, and there are several new basic commands to handle defining and moving the windows. The window facility is not only very useful in programs, but also comes in handy when debugging software. For example, two windows could be set

up, one occupying the top 12 lines, the other the bottom four lines. Listing could be sent to the main window, whilst editing is done in the smaller one. All windows have independent attributes, which means they have their own cursor position and inverse/normal characters, and all are capable of scrolling independently. Windows can overlap, but this is not generally very useful.

The program is loaded into reserved RAM at the top of memory. One BASIC can

be made to initialise it and from then on all text input goes to the 'current' window. At startup this is defined as the whole screen and so will not look any different. To define your own window the WINDOW command is used. It has the following parameters: WINDOW *win* (*x1*,*y1*,*x2*) where *win* is the window number (0 to 4), *x1* is the left edge screen column, and *x2* is the right edge column. The screen column runs from 0 to 21 and the rows from 0 to 15, 'y1' is the top row of the window, and 'y2' is the

```

10 REM *** Window program ***
20 CLEAR 200:GOTO 100:PRINT
30 WINDOW 0:0,0,21,15:PRINT ""
40 GOTO 40000:REM *** END ***
50 END:PRINT:END
70 REM ***
80 REM ***
90 DATA 124,125,126,127,128,129
100 DATA 127,128,129,130,131,132
110 DATA 130,131,132,133,134,135
120 DATA 134,135,136,137,138,139
130 DATA 138,139,140,141,142,143
140 DATA 141,142,143,144,145,146
150 DATA 145,146,147,148,149,150
160 DATA 149,150,151,152,153,154
170 DATA 153,154,155,156,157,158
180 DATA 157,158,159,160,161,162
190 DATA 161,162,163,164,165,166
200 DATA 165,166,167,168,169,170
210 DATA 169,170,171,172,173,174
220 DATA 173,174,175,176,177,178
230 DATA 177,178,179,180,181,182
240 DATA 181,182,183,184,185,186
250 DATA 185,186,187,188,189,190
260 DATA 189,190,191,192,193,194
270 DATA 193,194,195,196,197,198
280 DATA 197,198,199,200,201,202
290 DATA 201,202,203,204,205,206
300 DATA 205,206,207,208,209,210
310 DATA 209,210,211,212,213,214
320 DATA 213,214,215,216,217,218
330 DATA 217,218,219,220,221,222
340 DATA 221,222,223,224,225,226
350 DATA 225,226,227,228,229,230
360 DATA 229,230,231,232,233,234
370 DATA 233,234,235,236,237,238
380 DATA 237,238,239,240,241,242
390 DATA 241,242,243,244,245,246
400 DATA 245,246,247,248,249,250
410 DATA 249,250,251,252,253,254
420 DATA 253,254,255,256,257,258
430 DATA 257,258,259,260,261,262
440 DATA 261,262,263,264,265,266
450 DATA 265,266,267,268,269,270
460 DATA 269,270,271,272,273,274
470 DATA 273,274,275,276,277,278
480 DATA 277,278,279,280,281,282
490 DATA 281,282,283,284,285,286
500 DATA 285,286,287,288,289,290
510 DATA 289,290,291,292,293,294
520 DATA 293,294,295,296,297,298
530 DATA 297,298,299,300,301,302
540 DATA 301,302,303,304,305,306
550 DATA 305,306,307,308,309,310
560 DATA 309,310,311,312,313,314
570 DATA 313,314,315,316,317,318
580 DATA 317,318,319,320,321,322
590 DATA 321,322,323,324,325,326
600 DATA 325,326,327,328,329,330
610 DATA 329,330,331,332,333,334
620 DATA 333,334,335,336,337,338
630 DATA 337,338,339,340,341,342
640 DATA 341,342,343,344,345,346
650 DATA 345,346,347,348,349,350
660 DATA 349,350,351,352,353,354
670 DATA 353,354,355,356,357,358
680 DATA 357,358,359,360,361,362
690 DATA 361,362,363,364,365,366
700 DATA 365,366,367,368,369,370
710 DATA 369,370,371,372,373,374
720 DATA 373,374,375,376,377,378
730 DATA 377,378,379,380,381,382
740 DATA 381,382,383,384,385,386
750 DATA 385,386,387,388,389,390
760 DATA 389,390,391,392,393,394
770 DATA 393,394,395,396,397,398
780 DATA 397,398,399,400,401,402
790 DATA 401,402,403,404,405,406
800 DATA 405,406,407,408,409,410
810 DATA 409,410,411,412,413,414
820 DATA 413,414,415,416,417,418
830 DATA 417,418,419,420,421,422
840 DATA 421,422,423,424,425,426
850 DATA 425,426,427,428,429,430
860 DATA 429,430,431,432,433,434
870 DATA 433,434,435,436,437,438
880 DATA 437,438,439,440,441,442
890 DATA 441,442,443,444,445,446
900 DATA 445,446,447,448,449,450
910 DATA 449,450,451,452,453,454
920 DATA 453,454,455,456,457,458
930 DATA 457,458,459,460,461,462
940 DATA 461,462,463,464,465,466
950 DATA 465,466,467,468,469,470
960 DATA 469,470,471,472,473,474
970 DATA 473,474,475,476,477,478
980 DATA 477,478,479,480,481,482
990 DATA 481,482,483,484,485,486

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# Manic-Miner cheats the official version

*Roy Coates gives the authorized cheat method*

WHEN Manic-Miner was written it was envisaged that many people would give up trying to complete the game owing to some of the more difficult screens such as the warehouses. Because of this a cheat routine was written into the game which may be accessed as follows.

- 1 — Set the game running on the Central Cases.
- 2 — Press the 'F' key to Pause the game.
- 3 — Very quickly press the 'F' key again; this will re-start the game and will be taken as the first letter of the password which is 'PENDING'.
- 4 — Now enter the rest of the password 'ENQUIN'. If you have been successful a boot will appear at the bottom right hand corner of the screen.
- 5 — At any time whilst you are playing the game you may access the cheat. All you have to do is press the

'BREAK' key. The game will freeze. Now press a key in the range A to V to select your screen.

Please note that there is only one version of Manic-Miner and so this cheat will work on any valid copy of the game. For those of you who wish to make a permanent copy of the game with the cheat enabled and with unlimited lives read on.

Switch your Dragon OFF and then ON again ensuring that any cartridges are removed. Type in the BASIC program given below, carefully checking that the DATA statements are entered correctly. RUN the program and when prompted to press the ENTER key place a blank tape in your cassette player; press the ENTER key and the machine code routine held in the DATA statements will be saved to tape.

Again switch your Dragon OFF and then ON again; place your Manic-Miner tape in

the cassette recorder and load the game with the command

**LOADM"" 2000**

When this has loaded type in the following POKES.

**POKE &H000,&H00  
POKE &H5140,&H0A  
POKE &H40EF,&H20**

These POKES will enable the cheat routine and give unlimited lives. LOADM the program that was saved from above, place a blank tape in your cassette recorder and when ready to record type

**BASIC &H000**

A new version of Manic-Miner will now be saved to tape and may be loaded in the same way as the original.

Finally, my thanks to all the people who have written to me regarding Manic-Miner and Jarlief Nils; your letters are very much appreciated.

```
10 FOR A = &H000 TO &H032 : READ B# : POKE A,VAL ("0A"+B#)
20 NEXT A
30 INPUT "Press ENTER when ready to save..." ;#
40 CBAYEN "SAVE",&H000,&H032,&H000
50 DATA 0E,0A,3A,10,0E,01,02,AA,00,37,04,A7,02,28,F0,0E,01
60 DATA 5B,0F,01,E7,0E,09,38,34,10,0E,7D,0F,34,10,0E,0E,00
70 DATA 0F,01,03,34,10,7E,99,10,4D,49,4E,45,32,32,28,20,00
```

## Address specific loading

*another Roy Coates routine — how to put machine code programs just where you want them*

THE ABILITY of the Dragon to load machine code programs into memory at an address specified by the user is obviously a very useful one. Unfortunately, saving a portion of the Dragon's memory so that it appears on the tape as having a different load address has always been a bit of a problem. The machine code routine given here does just that. The routine gives is relocatable so that those using it without an assembler may choose any memory location as the origin for poking in the OpCodes here. This makes the listing very useful indeed.

The example shown here saves memory from \$2000 to \$3000 to tape but changes the tape descriptor block so that when re-loaded the code will load at \$1000 with an \$003C address of \$1100 where 'start' and 'end' are the start and end addresses you wish the final tape copy to have, and 'start' and 'end' are the start and end addresses of the actual code in

0000			ORG	0000	
0000 30	00 0037		LEAX		NAMELPCR
0004 109E	0100		LDY	+\$0100	
0000 A6	00	NLOOP	LDA	,X+	
000A 27	04		DEC	ADDR0	
000C A7	A0		STA	,Y+	
000E 20	F0		BRA	NLOOP	
0010 00	1000	ADDR0	LDX	+\$1000	'start'
0013 0F	00E7		STX	\$00E7	
0016 00	3000		LDX	+\$3000	'end'
0019 34	10		PSHS	X	
001B 00	3000		LDX	+\$3000	'end'
001E 34	10		PSHS	X	
0020 00	1100		LDX	+\$1100	'start'
0023 0F	0105		STX	\$0105	
0026 34	10		PSHS	X	
0029 7E	0010		JMP	\$0010	
002B 46 48	40 45	NAME	FCC		
002F 4E 41	40 45				
0032 00					



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**Keywords:** child sexual abuse; disclosure; social support; coping strategies

2004 December 15, 2005

# Greater than— or less than?

*Rob Lee provides some educational interest for Dragon users with children.*

**UNDERSTANDING** The ideas of "greater than" and "less than" may come as an introduction to Oregon users, but to children it is a concept which has to be learned. In school, the idea is often introduced by small group discussion of more than, bigger than, thinner than, colder than, etc. and then switching to using "greater than" in number conversations. Formal exercises of this sort often end the day:

Using the computer, however, gives us the opportunity to penetrate further into children's thinking, for we can create the six voices:

[illegible]

and ask children to feed numbers into the device and test the validity of the resultant statements.

The following program is both a family game and a teacher. The numbers to be put into the boxes are randomly generated and the players decide which box to put them in.

Numbers chosen by the die may (depending on the screen for a time proportional to the degree of difficulty chosen). Hence younger children can influence the number they get (by being quick on the spacetap), while those choosing harder options cannot. The type of statement (one of eight) you have to satisfy also alters with this choice.

1000

YOUR TURN ROBERT LEE

MAKE THIS STATEMENT TRUE

BOX A		BOX B		BOX C		BOX D
<div style="border: 2px solid black; width: 60px; height: 80px; margin: 0 auto; display: flex; align-items: center; justify-content: center;">7</div>	-	<div style="border: 2px solid black; width: 60px; height: 80px; margin: 0 auto; display: flex; align-items: center; justify-content: center;">?</div>	<	<div style="border: 2px solid black; width: 60px; height: 80px; margin: 0 auto; display: flex; align-items: center; justify-content: center;">?</div>	+	<div style="border: 2px solid black; width: 60px; height: 80px; margin: 0 auto; display: flex; align-items: center; justify-content: center;">?</div>

DIE ROLLING    1   2   **3**   +   5   6   7   8   9  
                               ↑  
IN WHICH BOX SHALL I PUT 3 ?

RUNNING TOTALS

ROBERT LEE + ANN HARRIS = 6

[illegible]

1000

The points awarded to players who succeed in making the statement true vary with the play. In the easier statement, a winner would get the value in box C. In the second case, box A. So, some degree of tactics can help you and additional motivation is added by this variation.

The game is thereby made fun and has a "come again" factor. It is not just a good

Or 'quit' however, if, at the end of a player's turn, the statement is false and he cannot see why, then a moving screen display does the appropriate substitutions to demonstrate the error.

[illegible]

- 124-126 Time sequences
- 130-131 Input/output
- 132-133 Set up screen
- 134-136 One setting & two sequences
- 137-140 Create individual scenes buffer
- 141-142 Instructions to other users

[illegible]

```

10 INPUT "LEVEL: ", L
20 GOTO 30 IF L<=0 OR L>=100
30 PRINT "ENTER GOTO 10"
40 CLS:PRINT "HOW MANY TIMES DO YOU WANT TO PRINT THE MESSAGE?"
50 INPUT "COUNT: ", C
60 WHILE C>0
70 PRINT "MESSAGE"
80 C=C-1
90 GOTO 40
100 CLS:PRINT "COUNT: ", C
110 END WHILE
120 PRINT "THANK YOU FOR TRYING THIS STATEMENT"
130 END

```

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**THREE** FOR the price of one, this month, with the arrival of *The Ket Trilogy* from Edgecraft at the reasonable price of \$9.95. This made its debut at the second 6000 Show, and some of you may have seen it there, and perhaps even bought it. For those who couldn't make the show, though, it's worth a fairly lengthy look. While at the show, incidentally, I was told by Microdeal that they have three Dragon adventures in the pipeline, so good luck to them and others who continue to be adventurous, while some drop out of the market.

### Three for one

Back to *Ket*, which comes in just one cassette, the first side containing *Mountains of Ket* and *Temple of Ket*, side two having *The Final Mission*. The adventures can all be played independently, so you can be working on all three at once, with success at each one revealing a part of a message for you. Throughout all the three you'll be accompanied by Edgar, a magic assassin (bug who has been placed on your neck with orders to sink his poisoned fangs into you if you try to chicken out along the way. Fortunately this doesn't interfere with the SAVE routine. Aside from Edgar, what the adventures have in common is that they use all three text-only, accepting most of the usual commands, generally in two-word form.

Each of the adventures also incorporates combat sequences, and while I don't normally care for this kind of intrusion, involving as it does an element of luck, at least here the sequences are brief and quite humorously done. You'll find you can fight all manner of creatures, humans and semi-humans: elephants, horses, warts, if they're in there, you can probably fight them, though it's frequently not a wise move.

The reason you have a creature called Edgar perched near your jugular vein is that you were recently sentenced to death for murder — though this was naturally a frame-up, you being an honest and intrepid adventurer. On the eve of your planned execution you were given a Do-or-Die option, and naturally you chose to Do, presumably on the grounds that an adventure where you choose to Die at the start would have limited appeal. Although you've been temporarily spared, no one's taking any chances, hence you have Edgar hovering at your throat.

The deed you have to do is try to bring peace to the lands of Ket, which are threatened by a group of mad monks living beyond the Mountains of Ket to the east of the village where you begin. A character called Vran is the leader of the monks, aided by the High Priestess, Delphia. Your overall task is to sort the two of them out, naughty people that they are.



THREE GREAT ADVENTURE PROGRAMS COMBINED TO CREATE THE CLASSIC **KET TRILOGY**

*Mountains of Ket* simply requires you to get to the far side of the Mountain alive, and as soon as I'd loaded this up the first thing I did was CLIMB. This wasn't sheer overconfidence, but sheer common sense. When you begin you're randomly allocated points for Prowess, Energy and Luck, and I thought I could do better than my initial 8, 21 and 9 points, so I CLIMB and CLIMB till I got a reasonable respectable 9, 22 and 12 points. Then a quick INVENTORY showed I was carrying some coins and the good old trusty sword, which is better than a rusty sword, I suppose. COUNT COINS showed that I had just two. I was on a road with fields either side and the village to the east.

### Mountains

Making my way to a stable I tried to buy a horse from the stableman, but he wouldn't let it go for less than four coins so I obviously had to increase my wealth somehow. (Being kind to someone pro-

vided me with more coins and a map, and I was able to return to a hardware shop which did a nice line in lamps. Not so nice were the phantas which prevented the swimming the river, and I wish the cartographer would let me pass to have a look round upstairs in his coach house, but he won't. Not yet, anyway.

Temple of Ket takes you beyond the Mountains of Ket and has you going further eastwards with the hope of finding the Temple and bringing about the demise of Delphia. You begin this one in a passage, and if you think you can simply nip back from the second adventure to solve the first one retrospectively, I'm afraid the passage is blocked by a boulder, put there by the final guardian, a Zombie. Your way forward is blocked by a river, but it should take you all of about 10 seconds to figure out how to cross it — I wish all the problems were so easy. On second thoughts, no I don't, as it wouldn't be much of an adventure then.

### Temple

The locations and objects here are rather strange, as you wander through a wilderness and suddenly meet up with an elephant, while further along is a sleeping kitten and a small hampline. Hardly the most realistic of stories, but at least it sets you some unusual problems. Your way north is barred by some quagmire, and east by a stilt edge over which dangles a rope. Sadly the rope is fixed to something at the bottom of the cliff, not the top, so climbing down is not recommended. Nor can you pull the rope up. The place is populated by little people called warts, and my first encounter with one of these was when I had a flask of acid thrown over me. Fortunately I'd already taken preventive action, even if I hadn't realised what I was doing. Beyond here lies a door, which is difficult to open, but once through there you find yourself in a large room, at which is a wart kitchen, where no washing up has been done for years. Down some stairs is a ruby and a skeleton, with the skeleton somehow managing to block my easy exit, while upstairs there are lots of warts who insist on engaging you in combat. You can always run away, after the initial attack, but even so they somehow manage to get in a final blow as you go, and these slowly whittle away at your energy points.

Having been warned to death several



times I read *The Final Mission*, in which you confront the evil Viper himself, though your first task is to get out of the prison cell where you find yourself, with just a chair for company. Pretty easy, but then you find yourself in another cell with nothing more exciting than a lot of straw in the corner. The way out of here turned a little unlikely, though you're sure to hit on it with the limited objects at your disposal. No sooner was I out of this cell though than I came face to face with something called the *Ein Monster*, and that polished me off with no trouble.



Though I wouldn't say *The Kai Trilogy* was the best set of adventures I'd ever seen, it's certainly recommended as giving good value for money and problems enough to keep you going for ages. When originally published on the Spectrum, a prize of a video recorder was being offered to the first to solve all three titles, and although that's now been claimed you can take some comfort in knowing that it wasn't won for some considerable time after the adventures appeared.

Less room for letters this month, but here are a few tips and pleas. Simon Head of Whitehaven asked me for general help on *Sea Quest*, and also wanted to know how to open the trapdoor in the beach hut. General help is virtually impossible to give, unless you know exactly where a person is stuck and how far they've explored the adventure, so always try to ask fairly specific questions. The answer to Simon's specific question (written backwards) is that: **ISAM REMEH TRACOF YERKE HTDE ISMUO Y.**

Joy Birley of Eryl Don, Mona Terrace, Gloucestershire is stuck in *Franklin's Tower*, unable to find a coin to use in the jake tube and unable to get out of the pulley room and obtaining the Copper Star. If you can offer Joy any joy on those, let her know.

Roll Michelson of Segrise, age 33, 7700 Stanger, Norway, kindly says thanks "for an excellent page in an excellent magazine. Continue like this!" Well we'll all try to, Roll. He's completely stuck, he says, in *Return of the Ring*, and listed four questions: how to get the amulet from the frog; where to find the transportal eight miles into the forest; how to escape from the monsters in the forest; and how to use the rings to get some useful results. I've answered Roll on some of those, which are a little lengthy to print backwards, but if you too can offer advice on those problems then do write to him in Norway.

Some of you may know the name of Neil Scrimgeour, who runs the ASDI column of the National Dragon User Group, and Neil

writes to recommend a few Tandy adventures for anyone with the Dragon's sister machine. He says *Pyramid 2000* is good, being a Tandy implementation of the original *Colossal Cave*, while he also rates *Reavers and Devils*, even if he is unable to get past the guard dog in the latter. Help to Neil at 125 Occupation Road, Gorty, Northants NN17 1DG.



Finally, to show that some people do actually read the column, a letter from Femmes, whose adventure *The Trial of Arnold Blackwood* I reviewed some months ago. It's a good adventure, but I complained that it didn't have a SAVE routine. Programmer Colin Harris has now incorporated this, and sent a new version to prove it, mentioning that copies are now also available from Touchmaster. If he sells a few more he may set about converting more Arnold adventures for the Dragon, so over to you, dear readers. In fact, it's over and out.

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## Dragon Answers

### Alldream

**COULD YOU** possibly tell me how to change Alldream cassette to allow saving and loading text files to and from Dragon disk instead of cassette.

Ian Ferguson  
10 Woodhall Road  
Luton

IT IS not possible to change the Dream programs to save to disk rather than cassette directly. However, one method is to have a Basic program running which calls DREAM and also handles commands such as SAVE and LOAD. The start address of a Dream text file can be found by ST+P000 (27041)+250-P000 (27143), assuming that Dream is loaded at its default address.

The text file is then saved by SAVE "filename", ST+7778, 37778. The file can simply be loaded by LOAD "filename", as the values were saved with the file these will be restored automatically on loading.

### On the edge!

I HAVE recently purchased the Electromechanical Technology interface, and have obtained a circuit diagram from Dr Mark Varney to allow simultaneous use of Dragon DGS with the interface.

The address decoding circuit is quite straight forward, but I cannot obtain edge connectors of the type in the Dragon cartridge port (2 = 30).

Can you give me the address of a supplier as I have listed numerous ones?

Mark Main  
53 Grompton Road  
Abandon

YOU CAN obtain 2 x 32 way edge connectors from your local Tandy store, or Magline to name but two. These can be trimmed down to 2 x 30 way if required. The Tandy catalogue number is 278-1061, and the Magline catalogue number is PE227. Magline can be contacted on 0782 564150. Both should cost less than £3.

### CoCo

**COULD YOU** please let me know what changes are required to run



the two following programs on the TMS CoCo:

- 1 Autorun (July 1984 issue)
- 2 Snake Key Quixote (October 1984 issue)

I would be most grateful as I have watched everywhere in vain.

David Pheas  
4 Pine Street  
Parnworth  
Bateson SL4 3PB

THESE are one of a number of letters from Tandy owners asking about the Autorun listing. The only reason these routines will not work on a Tandy machine is that the ROM routines used are at different addresses. A version of the first key disable routine for the CoCo is listed below.

The ROM calls you will need to change in the AUTORUN listing are as follows:

Dragon	Tandy
23864	44702
40767	42960
33649	44547
39180	35587
40884	42967
33823	44031
33733	44071
33861	44046

### Autorune

WHEN I was working on a program for writing music script I found a very strange bug in my Dragon. I had set my Selskista GP-1004 in graphic mode, and intended to use a dual sound to warn of "line full". However, when the Printer was to Print the notes, it started with a long graphic string of CHR\$(255). After a lot of frustration I finally managed to find that two consecutive sound commands somehow fed a string of characters to the Printer.

NO "N-Z CHR\$(255)

20 GOSUB 2000,1  
30 GOSUB 2000,1  
40 "N-Z"

should just produce a line feed in line 40, but instead there is this strange string.

Could you explain this?

With kind greetings from a Dragon's lair in Sweden.

Åke Lindgren  
Björkholm  
Sweden

THE PROBLEM you have found is indeed a bug in the Dragon 32's ROM which was cleared up in the 34's ROM. The problem comes because the Keyboard and Printer share the same output P0 port, and the Printer Status line is part of the same address as the D/A converter used for generating sound. The bug is in the sound generation routines which occasionally stroke the printer line, which

results in the Keyboard data going out to the Printer!

You can best avoid the problem by avoiding the use of CHR\$(255) and by keeping your hands off the keys whilst the program is running.

### Define

I AM currently in the process of writing a program, in machine code, for the Dragon 32. In this program I need to define my own BASIC words. My only problem is how to convert variables and constants used by the words, into machine equivalents.

I would be grateful if you could tell me how to do this without producing "syntax" and "function call" errors.

Simon Joyce  
47 King Street  
Bradley  
Bristol  
West Midlands

THE FOLLOWING ROM routines can be used in your own command handlers for accessing numeric variables:

JSR 35433 returns the value of the following variable as an 8 bit number in the 'X' register.

JSR 35482 returns the value of the following variable as a 16 bit number in the 'X' register.

If either value is out of range, is greater than 255 in the first case and greater than 65535 in the second case then a PG error is automatically produced.

## Screen dumps

A NUMBER of letters have come in regarding problems with screen dumps.

The commonest problem is unexpected characters appearing in the middle of the screen dump, or unwanted blank lines appearing. These problems are all caused by the Dragon's printer routine. This has the annoying habit of inserting an extra "space" character if it thinks the printer is at the start of a line when a carriage return code is to be printed.

The solution to the problem depends upon how the original screen dump program was written. For basic programs, add the command P00C 158,10 immediately before any PG-2 commands. This will also have the effect of disabling the auto-LF feature, so you should set the dip switches in your printer so that a LF is not required.

For machine code screen dumps change any calls to the printer routine at 08410 (JSP 08470) to a call to the routine at 08373 (JSP 08373). This latter routine simply outputs the character in the A register directly to the printer without interspersing newlines and CR characters.

Finally, you can also try typing P00C 05203, P00C 05203; AND 254 before using the screen dump program. This will disable interrupts and prevent "extra" characters being printed.

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1997-1998



# Palindromic number puzzles

Gordon Lee sets the challenge — Design Design provide the prizes

PALINDROMIC numbers can provide quite a few surprises! These, as might be expected, are numbers which read the same forwards as backwards. Here are a few examples: 121, 14641, 43834, 44944, 1234321 and 4308034.

You may have noticed that as well as being palindromic, these numbers are also perfect squares. Even more curiously, their square roots are also palindromic. In fact, research shows that there is an infinite number of palindromic squares and many of these appear to have roots which are also palindromic.

It is not difficult to program a computer to print out a list of palindromic squares, and if this is done it will be seen that the majority have an odd number of digits. Amongst the lower orders of squares there are just two with an even number, 694,694 which is the square of 834, and 637,832,238,736 — the square of 798,644. One particularly unusual palindromic square is 1111111111 — 1034657867654321.

## Curious cubes

If palindromic squares are curious, then palindromic cubes are even more so. In general, every cube that is palindromic will have a palindromic cube root. (Note that this is not the same as saying that the cube of a palindromic will be palindromic). Every cube so far tested seems to obey this rule with just one exception!

Quite why this should be has not yet been demonstrated, nor does any proof exist that there is a second exception to this rule, but all cubes under  $2.8 \times 10^{11}$  have been tested by computer and all but one agree with the rule. I will not give this exception here as readers might enjoy solving this problem for themselves. Although it is not a particularly high number, its computation is slightly beyond the normal mathematical functions of the 'Ori-

gon' and so a slightly more sophisticated approach is required.

Just as there are an infinite number of palindromic squares, so too are there an infinity of palindromic primes. Every palindromic prime must have an odd number of digits, with just one exception — the two-digit prime 11.

Number theorists will very soon realise that all palindromes with an even number of digits must automatically be exactly divisible by 11, and therefore — except for 11 itself — cannot be prime. Of particular interest are the four numbers 13631, 14741, 15951, and 19091. Apart from these all being palindromic primes, they have a common difference of 810.

## Rep-units

Also of interest are the so-called rep-unit primes. These are numbers consisting of the single digit '1', and so are palindromic in a rather special way. Apart from 11, the only other known primes of this type were, for many years, 11111111111111111 and 11111111111111111111. More recently the number consisting of 317 ones has also been shown to be prime!

There is one particular problem relating to palindromic numbers which has been of interest to mathematicians for many years. The advent of high-speed computers has enabled the problem to be attacked forthrightly, but the problem's enigmatic nature still remains.

Take any positive integer, write down its digits in reverse order and add the two numbers together. Take this new total and repeat the procedure until the total becomes palindromic. For example, the starting number 126 becomes palindromic in just two steps:

```
126
  621
---
 747
 747
---
```

```
10 CLAR: P&CUB=10
20 FOR P=1 TO 100
30 P4="":CARRY=0
40 FOR P4=LEN(P) TO 1 STEP -1
50 A=VAL(P4)
60 A4=VAL(P4)
70 IF A4 THEN CARRY=INT((A+A4)/10)+CARRY:GOTO 40
80 P4=P4+STR$(CARRY)
90 P4=P4+P4
100 IF CARRY THEN P4=STR$(CARRY)+P4+P4
110 GOTO 20
```

This program should have appeared in June's competition page

The theory is that all numbers should eventually become palindromic, but this is far from proved. Of the first ten thousand integers tested by computer, all but 248 of them have formed palindromes in under 25 steps. Of these, the longest palindrome is 16,888,488,488,681 formed after 20 steps from the starting value 8999 and 7998 (or their reversals).

## Small exception

The smallest number that does not form a palindrome is 196, and this has been computed beyond many thousands of steps without obligingly forming a palindrome. This month's competition involves this value, 196. If this number is taken as described to the three hundred step, somewhere along the number so formed at that stage will be the sequence of nine digits: 44-----45. Can you fill in the missing five digits?

Of course, you will have to work out the rest of the number too!

## Prize

THIS MONTH'S prize is 20 copies of Design Design's arcade game *Revenge's Revenge* — possibly the best implementation of *Battlezone* on any micro.

## Rules

To win a copy of Design Design's *Revenge's Revenge*, you must both show the answer to the competition and how to solve it with the use of a Basic program written on your Dragon. Please do not send in a cassette containing your answer.

As a disclaimer, complete the following sentence in 12 words or less: "I want to take on Revenge because ..."

Your entry must reach Dragon User by the last working day in July. The winners will be announced in the October issue.

## April Winners

Four perspicacious Dragon User readers managed to win themselves Dragon 64s donated by Compuques. They are Christine Richmond of Preston, J. Bowen of Rugeley, G. Hamilton of Stalybridge and N. Gosling of Alveston. They will be receiving written confirmation soon.

# RETURN OF THE RING

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